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(19) (CA) **CANADIAN PATENT** (12)

(54) Footwear with Orientation Signal Device

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#### ABSTRACT OF THE DISCLOSURE

A pair of shoes is provided that has means that indicate to a child when they are not arranged in the proper manner for wear. A first shoe or boot has a magnet mounted therein and located close to one side of the shoe or boot a  
5 predetermined distance from the rear end. A second matching shoe or boot has an electrically operated signal means mounted therein, a battery for operating the signal means, and a magnetically activated switch connected to the signal  
10 means and the battery. The switch is located close to the side of the second shoe or boot corresponding to said one side of the first shoe or boot and approximately said predetermined distance from the rear end. The magnet can be  
15 embedded in the heel of one shoe or boot while the signal means, battery and switch are located in the heel of the other.

Systeme magnetique + detecteur piezo.  
dans la chaussure


But : indiquer si l'enfant ne s'est pas trompé  
de pied

This invention relates to footwear such as a pair of shoes or boots and in particular footwear designed for children.

Young children often have difficulty in determining which shoe or boot of a pair is intended for the left foot and which fits the right foot. The confusion is due to the similarity in size and shape of each member of the pair. Sometimes it is difficult to train a child to put the proper piece of footwear on the proper foot.

The present invention provides footwear equipped with means for signaling or telling a child when his or her footwear is not arranged in the proper manner for wear. The signal device disclosed herein can be provided easily and with little additional expense. Moreover, with normal use it can be expected to last a considerable length of time without requiring replacement or maintenance.

According to the present invention, footwear for a person comprises first and second matching footwear members, a magnet mounted in the first member close to one side of the member and arranged a selected distance from the heel end of the first member, and a signaling device mounted in the second member. The signaling device includes battery means for powering the device and a magnetically activated switch which is located close to the side of the second member which is opposite the side that corresponds to the one side of the first member. The switch is approximately said selected distance from the heel end of the second member.



In one preferred embodiment the magnet is permanently fixed in the heel of the first member and the signaling device is located in a chamber provided in the heel of the second member.

5 Further features and advantages will become apparent from the following detailed description of a preferred embodiment wherein:

Figure 1 is an illustration showing the general arrangement of footwear that incorporates the present invention, which footwear is arranged in the proper manner for wear;

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Figure 2 is a side view of the left shoe of Figure 1 showing the placement of the magnet therein;

Figure 3 is a cut-away sectional view taken along the line from III-III of Figure 1; and

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Figure 4 is a circuit diagram illustrating the circuit for the signalling device.

Except as described hereinafter, the footwear constructed in accordance with the present invention is constructed in the usual manner. This is illustrated in Figure 2 where a standard shoe, modified to incorporate the present invention, is shown. It will be understood that the present invention can be used in any type of footwear including shoes, boots, slippers, sandals, etc. For ease of description, reference will hereinafter be made only to the illustrated shoes but this should not be taken as limiting the present invention to use in conjunction with shoes only.

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Figure 1 of the drawings shows the general pattern and layout for a right shoe 10 and a left shoe 12, both viewed from the top. Each of these shoes comes with a heel 14 or 16 in the position indicated. In accordance with the present invention, one of these shoes has a magnet 18 mounted therein and located close to one side of the shoe. In the illustration of Figure 1, the magnet is located in the left shoe but it will be understood that it could be located in the right shoe instead. A signalling device 20 is mounted in the other shoe, in this case the right shoe. The precise construction of this signalling device will be described in detail hereinafter. As shown in Figure 1, the signalling device is also located close to one side of the right shoe and in fact is located close to the side of the right shoe opposite the side that corresponds to the side of the left shoe where the magnet is located. It should further be noted that the magnet is located a predetermined or selected distance  $d$  from the rear end or heel end of the shoe. Similarly the signalling device is also located approximately said predetermined distance  $d$  from the rear end of the right shoe. When the shoes are arranged properly, that is with the left shoe on the left hand side and the right shoe on the right hand side as shown in Figure 1, the signaling device will not buzz or sound an alarm. However when the shoes are not arranged properly, it will be appreciated that magnet 18 will be in close proximity to the signaling device 20. Because the signaling device has a

magnetically activated switch 22 arranged close to the side of the shoe, the presence of the magnet will close the switch and sound an alarm or buzzer. This will tell the child that the shoes are not arranged properly and should be re-arranged before they are put on the child's feet.

5 The cut-away view of Figure 3 shows an insulating plastics housing 24 which can be placed in a chamber 26 formed in the shoe that is to have the signalling device. It will be appreciated that this housing 24 contains the electrical circuit and electrical component shown in Figure 10 4 and it can be permanently sealed if desired. The housing can be made from an upper part 27 and a co-operating lower part 28 that can be permanently fused together. Alternatively if it is desired to provide means for replacing the battery of the signalling device the two parts 15 27 and 28 can be detachably connected together. A small flap 30 can be provided in the heel to cover the chamber 26. Then when one wishes to replace the signalling device or the battery therein the flexible flap 30 can be peeled back to permit removal of the signalling device from the chamber. 20 It will be understood that the housing 24 can be made strong enough to support the flap 30 from beneath when it is restored to the position shown in Figure 3.

Turning now to the signalling device and circuit illustrated in Figure 4, the battery means is indicated at 25 32 and it is connected by the electric wire or lead 37 to the ground 50. The opposite terminal of the battery

32 is connected to a magnetically activated reed switch 22. In one preferred embodiment the battery is a 3 volt lithium battery and the switch is a Burroughs number 1129-1812-000-A00. It will be appreciated that this type of switch will close the circuit when it is in close proximity to a magnet such as the magnet 18. Connected between the switch 22 and the signaling means 36 are a load resistor 40 and a biasing resistor 42. In the illustrated preferred embodiment the resistor 40 can be size 470 ohms while the resistor 42 is 220 K. There is a current limiting resistor 44 connected to the signaling means 36 by a wire or lead 46. Both of the resistors 40 and 44 are connected to a transistor 48 which is connected to ground at 50. In one preferred embodiment, the transistor is one available from Radio Shack, catalogue number C-1537.

The preferred signaling means 36 is a piezoelectric crystal element such as that available from Radio Shack, catalogue number 273-064. It will be appreciated that closure of switch 22 will cause the crystal element at 36 to emit a buzzing sound that can easily be heard. The operation and construction of such crystal elements are well known and further description of this element is believed unnecessary.

From the above description, it will be seen that the present inventors have provided an inexpensive means which will enable small children to readily determine for themselves when their shoes or boots are properly arranged.

It is thus believed that the present invention will find its primary use in children's footwear, particularly footwear intended for children up to seven years of age. Although the illustrated footwear has the battery and the alarm device located in the heels of the shoes, it will be readily appreciated that both could be located closer to the front of the shoes if desired. This is particularly true if the shoes or boots have thick soles.

It will be further appreciated that instead of triggering an alarm, the closure of the switch could trigger the operation of a musical or voice device made small enough to be incorporated in a shoe or boot. It will be clearly understood that the term "signal means" or "signaling device" used herein and hereafter are intended to include all such devices, alarms, or buzzers. The construction of such musical or voice devices is now well known in the electronics art.

It will be appreciated that various modifications or changes could be made to the footwear described herein without departing from the spirit and scope of this invention and all such modifications and changes fall within the scope of the appended claims are intended to be covered.



The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. Footwear for a human being comprising a first shoe having a magnet mounted therein and located close to one side of the shoe a predetermined distance from the rear end of the shoe, and a second matching shoe having an electrically operated signal means mounted therein, battery means for operating said signal means, and a magnetically activated switch connected to said signal means and said battery means, said switch being located close to the side of said second shoe which is opposite the side thereof corresponding to said one side of said first shoe and approximately said predetermined distance from the rear end of said second shoe.
2. Footwear according to claim 1 wherein said magnet is embedded in the heel of said first shoe and said signal means, battery means, and switch are located in the heel of said second shoe.
3. Footwear according to claim 1 wherein said signal means includes a piezoelectric crystal element.
4. Footwear according to claim 1, 2, or 3 wherein said footwear is sized for a small child.
5. Footwear according to claim 2 or 3 wherein said signal means, battery means and switch are mounted in an insulating plastics housing that is removable from the heel of said second shoe.


6. Footwear according to claim 1, 2, or 3 wherein said signal means, battery means and switch are parts of an electrical circuit that includes a transistor, a biasing resistor, a current limiting resistor and a load resistor.

7. Footwear according to claim 1, 2 or 3 wherein said battery means is a lithium battery not exceeding three volts in size.

8. Footwear for a person comprising first and second matching footwear members, a magnet mounted in said first member close to one side of the member and arranged a selected distance from the heel end of the first member, and a signaling device mounted in said second member, said device including battery means for powering the device and a magnetically activated switch which is located close to the side of the second member which is opposite the side thereof corresponding to said one side of said first member and approximately said selected distance from the heel end of the second member.

9. Footwear according to claim 8 wherein said magnet is permanently fixed in the heel of said first member and said signaling device is located in a chamber provided in the heel of the second member.

10. Footwear according to claim 2 wherein said signaling device produces an audible sound upon closure of said switch by means of a piezoelectric crystal element.



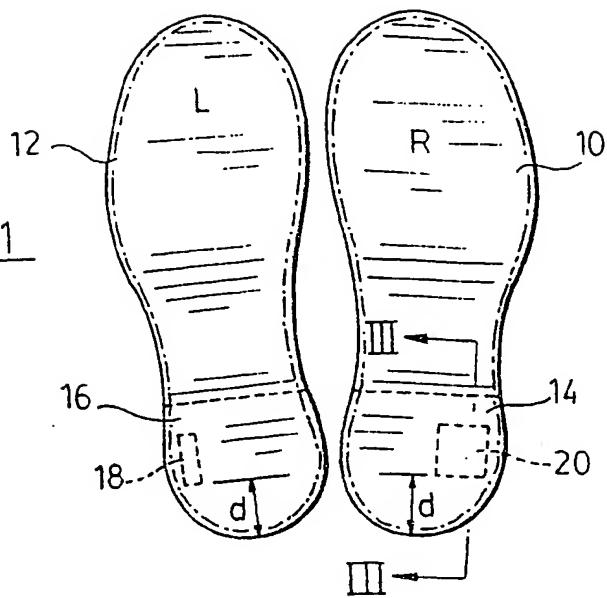


FIG. 1

FIG. 2

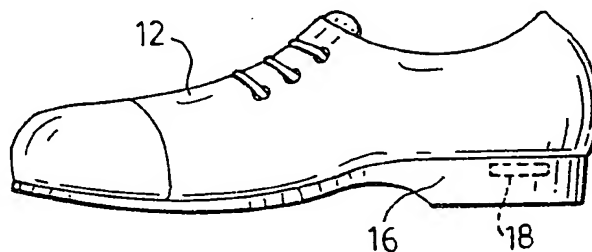


FIG. 3

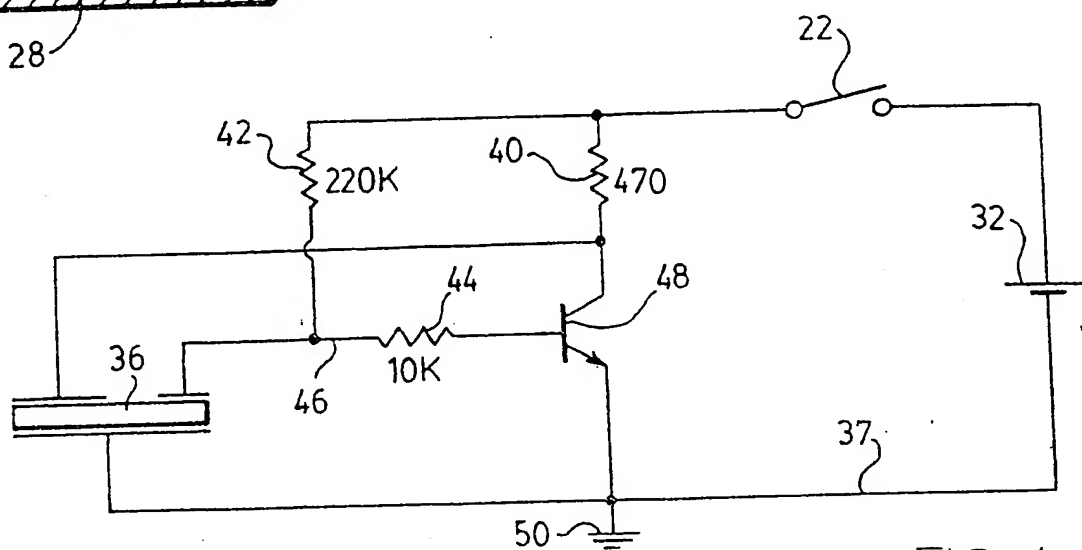
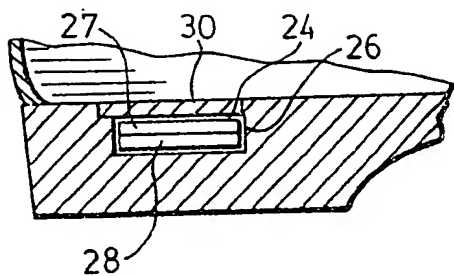


FIG. 4